WE CLAIM:

1. A nanocomposite reinforced polymer extruded into a tube having 0.001 inches to 0.500 inches inside diameter for use in an intravenous catheter.

2. A reinforced polymer blend formed by extruding a nanocomposite polymer with a pure virgin copolymer into tubing having an inside diameter of 0.001 to 0.500 inches.

3. A reinforced polymer blend as defined in Claim 2 wherein said nanocomposite polymer includes nanoparticles therein.

4. A reinforced polymer blend as defined in Claim 2 wherein said pure virgin copolymer comprises a reacted plastic material formed from a mixture of at least two individual component polymers in order to provide the reinforced polymer blend with at least some mechanical properties attributable to each of said individual component polymers.

5. A reinforced polymer blend as defined in Claim 2 wherein said nanocomposite polymer and said pure virgin

copolymer share a common chemical segment and matrix.

6. A reinforced polymer blend as defined in Claim 2 wherein said nanocomposite polymer and said pure virgin copolymer both are based upon thermoplastic polymers having the same crystalline chemical form.

7. A reinforced polymer blend as defined in Claim 2 wherein said pure virgin copolymer is added to said nanocomposite polymer in metered amounts to predetermine the mechanical properties of the resultant reinforced polymer blend so formed.

8. A reinforced polymer blend as defined in Claim 7 wherein said nanocomposite polymer and said pure virgin copolymer share a common chemical family and matrix to enhance predictability of the mechanical properties of the resultant reinforced polymer blend so formed.

9. A reinforced polymer blend as defined in Claim 2 wherein said pure virgin copolymer includes Nylon and said nanocomposite polymer include Nylon.

10. A reinforced polymer blend as defined in Claim 9 wherein said pure virgin copolymer includes Nylon 6 and said nanocomposite polymer includes Nylon 6.

11. A reinforced polymer blend as defined in Claim 9 wherein said pure virgin copolymer includes Nylon 11 and said nanocomposite polymer includes Nylon 11.

12. A reinforced polymer blend as defined in Claim 9 wherein said pure virgin copolymer includes Nylon 12 and said nanocomposite polymer includes Nylon 12.

13. A reinforced polymer blend as defined in Claim 9 wherein a series of decreasing durometer blends are produced with similar melting points for advantages in forming composite guide catheters.

14. A reinforced polymer blend as defined in Claim 7 wherein the mechanical properties of the resultant reinforced polymer blend are intermediate between the mechanical properties of the pure virgin copolymer and the nanocomposite polymer.

15. A reinforced polymer blend as defined in Claim 8 wherein at least some of the mechanical properties of the resultant reinforced polymer blend are higher than the same mechanical properties of the pure virgin copolymer and the nanocomposite polymer.

16. A reinforced polymer blend as defined in Claim 15 wherein the mechanical properties include stiffness.

17. A reinforced polymer blend as defined in Claim 15 wherein the mechanical properties include dimensional stability.

18. A reinforced polymer blend as defined in Claim 15 wherein the mechanical properties include outer surfaces with more lubricity with reduced tendency for dust contaminants to adhere thereto.

19. A reinforced polymer blend as defined in Claim 15 wherein said mechanical properties include outer surfaces with enhanced lubricity for ease of catheter placement and movement.

20. A reinforced polymer blend as defined in Claim 15 wherein the mechanical properties include ductility.

21. A reinforced polymer blend as defined in Claim 2 wherein said pure virgin copolymer is nylon based.

22. A reinforced polymer blend as defined in Claim 21 wherein said nanocomposite polymer is polyamide-based to form a resultant reinforced polymer blend which is

also polyamide-based.

23. A reinforced polymer blend as defined in Claim 21 wherein said nanocomposite polymer is polyester-based to form a resultant reinforced polymer blend which is also polyester-based.

24. A reinforced polymer blend as defined in Claim 2 wherein said nanocomposite polymer includes 1% to 10% by weight of nanoparticles with Nylon 12 and wherein said pure virgin copolymer comprises Nylon 12.

25. A reinforced polymer blend as defined in Claim 24 wherein said Nylon 12 pure virgin copolymer is added to said nanocomposite polymer in pre-specified amounts in order to predetermine hardness of the resultant reinforced polymer blend so formed.

26. A reinforced polymer blend as defined in Claim 4 wherein the resultant reinforced polymer blend so formed is transparent.

27. A reinforced polymer blend as defined in Claim 4 wherein the resultant reinforced polymer blend so formed is at least partially translucent.

28. A reinforced polymer blend as defined in Claim 4 wherein the resultant reinforced polymer blend so formed is opaque.

29. A reinforced polymer blend as defined in Claim 7 wherein the cooling down time for the resultant reinforced polymer blend is increased.

30. A reinforced polymer blend as defined in Claim 7 wherein the resultant reinforced polymer blend is cooled down in a temperature controlled environment having an increased temperature in order to improve ductility and dimensional stability thereof.

31. A reinforced polymer blend as defined in Claim 7 wherein the resultant reinforced polymer blend is cooled down in an ambient air environment.

32. A reinforced polymer blend as defined in Claim 7 wherein the draw down ratio is increased to increase the final stiffness of the resultant reinforced polymer blended material.

33. A reinforced polymer blend as defined in Claim 7 wherein the nanocomposite polymer increases the adherence of ink used for printing on the exterior of

any product formed from the resultant nanocomposite reinforced polymer blend material.

34. A reinforced homopolymer nanocomposite material with prespecified strength parameters controlled by the metered amount of pure virgin copolymers added thereto wherein the pure virgin copolymers are similar chemically to the homopolymer in the reinforced homopolymer nanocomposite material.

35. A reinforced homopolymer nanocomposite material with prespecified strength parameters as defined in Claim 34 wherein the resultant reinforced homopolymer nanocomposite materials is formed into pellets.

36. An intravenous catheter or part thereof formed from thermoplastic reinforced polymer tubing wherein the ductility thereof is controlled by the relative amount of pure virgin polymer extruded with a nanocomposite reinforced copolymer.

37. An intravenous catheter or part thereof formed from thermoplastic reinforced polymer tubing as defined in Claim 36 wherein the flexibility of the intravenous catheter is further controllable by controlling the temperature of the pure virgin polymer and the

nanocomposite reinforced copolymer during extrusion.

38. An intravenous catheter or part thereof formed from thermoplastic reinforced polymer tubing as defined in Claim 36 wherein the flexibility is further controllable by multilayer extrusion.

39. A reinforced polymer blend formed by extruding a first nanocomposite polymer with a second nanocomposite polymer into tubing having an inside diameter of 0.001 to 0.500 inches.

40. A reinforced polymer blend as defined in Claim 39 wherein said first nanocomposite polymer includes Nylon 6 and said second nanocomposite polymer includes a Pebax-based nanocomposite.

41. A reinforced polymer blend formed by extruding a nanocomposite polymer with a pure virgin copolymer into pellets.

42. A reinforced polymer blend formed by blending together a nanocomposite reinforced polymer and a virgin block copolymer to produce a resultant reinforced copolymer blend having a toughness greater than the toughness of the nanocomposite reinforced polymer and having a

toughness greater than the toughness of the virgin block copolymer.

43. A reinforced polymer blend as defined in Claim 42 wherein toughness is a mechanical property calculated as the product of tensile strength and elongation to break rating.

44. A reinforced polymer blend as defined in Claim 42 wherein the virgin block copolymer comprises Nylon based.

45. A reinforced polymer blend as defined in Claim 44 wherein the virgin block copolymer comprises Pebax 7233.

46. A reinforced polymer blend as defined in Claim 44 wherein the virgin block copolymer comprises Pebax 2533.

47. A reinforced polymer blend as defined in Claim 42 wherein the nanocomposite reinforced polymer is Nylon based.

48. A reinforced polymer blend as defined in Claim 47 wherein the nanocomposite reinforced polymer is based

on Nylon 12.

49. A reinforced polymer blend as defined in Claim 42 wherein the strength and modulus of the resultant reinforced copolymer blend is maintained at a value intermediate between the strength and modulus values of the nanocomposite reinforced polymer and the virgin block copolymer.

50. A reinforced polymer blend as defined in Claim 42 wherein said nanocomposite reinforced polymer includes nanoparticles of less than 20% by weight.

51. A reinforced polymer blend as defined in Claim 42 wherein said nanocomposite reinforced polymer and said virgin block copolymer are blended together with equal amounts by weight.

52. A reinforced polymer blend as defined in Claim 42 wherein said nanocomposite reinforced polymer has approximately 5% nanoparticles by weight.

53. A reinforced polymer blend as defined in Claim 42 wherein the resultant reinforced polymer blend contains approximately 5% nanoparticles by weight.

54. A reinforced polymer blend as defined in Claim 51 wherein the resultant reinforced polymer blend contains approximately 2.5% nanoparticles by weight.

55. A reinforced polymer blend formed by extruding a nanocomposite polymer with its analogous pure virgin polymer into tubing having an inside diameter of 0.001 to 0.500 inches.

56. A method of producing a polymeric material with prespecified stress and strain parameters by diluting of a reinforced nanocomposite polymer blend with pure virgin thermoplastic polymers.

57. The method of producing a polymeric material with prespecified stress and strain parameters as defined in Claim 56 wherein the resultant produced polymeric material is extruded into tubular shape having an inside diameter of 0.001 to 0.500 inches.

58. The method of producing a polymeric material with prespecified stress and strain parameters as defined in Claim 56 wherein the resultant produced polymeric material is extruded into pellets.

59. The method of producing a polymeric material with prespecified stress and strain parameters as defined in Claim 57 wherein said extruding is performed within prespecified temperature conditions to produce the resultant polymeric material with prespecified stress and strain parameters.

60. The method of producing a polymeric material with prespecified stress and strain parameters as defined in Claim 59 wherein the extruding is performed at a temperature between 40 degrees to 100 degrees Fahrenheit.

61. The method of producing a polymeric material with prespecified stress and strain parameters as defined in Claim 56 wherein the reinforced nanocomposite polymer blend is a polyamide-based thermoplastic nanocomposite.

62. The method of producing a polymeric material with prespecified stress and strain parameters as defined in Claim 56 wherein the pure virgin thermoplastic polymer is Nylon-based.

63. The method of producing a polymeric material with prespecified stress and strain parameters as defined in Claim 61 wherein the polyamide-based thermoplastic

nanocomposite is based on Nylon and the pure virgin thermoplastic polymer is a polyether block amide.

64. The method of producing a polymeric material with prespecified stress and strain parameters as defined in Claim 63 wherein the polyamide nanocomposite is based on Nylon 11.

60. The method of producing a polymeric material with prespecified stress and strain parameters as defined in Claim 63 wherein the polyamide nanocomposite is based on Nylon 12.

66. The method of producing a polymeric material with prespecified stress and strain parameters as defined in Claim 63 wherein the polyamide nanocomposite is based on Nylon 6.